

REMARKS**DISCUSSION OF DRAWING**

Submitted herewith is a complete set of replacement formal drawings, which include amended Figures 1, 3, 4, 7 and 8 in which “handwritten” text is replaced with “typed” text. No new matter has been added to the figures. Applicant respectfully requests acceptance of the amendments.

DISCUSSION OF SPECIFICATION

The specification has been amended to correct typographical informalities. Applicant respectfully requests acceptance of the amended specification because no substantive new matter has been added.

DISCUSSION OF CLAIMS

In the Office Action, claims 1-3, 5-17, 19, and 21 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,318,593 to Duggan.

In the Office Action, claims 4, 18, and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Duggan in view of U.S. Patent Number 5,127,402 to Mann et al.

In response thereto, claims 1, 8, 11, 13, 14, and 21 have been amended and new claims 22-26 have been added. Accordingly, claims 1-26 and are now pending. Following is a discussion of the patentability of each of the pending claims.

Independent Claim 1

Claim 1 recites a method for operating an implantable cardiac stimulation device. The method comprises dynamically modifying a pacing pulse energy, determining whether one or more operating parameters require adjustment in response to a change in the pacing pulse amplitude, and adjusting a value for an operating parameter to a new value if the operating parameter requires adjustment, wherein the new value is based upon the pacing pulse energy. The one or more operating parameters are other than pacing pulse width and pacing pulse amplitude.

The Duggan reference discloses an implantable pacemaker directed to maintaining a constant energy level for each stimulating pulse applied to a patient's heart even though the voltage level of a power source decreases with life. In accordance with column 8, lines 48-57, the output voltage V_s of the power source is coupled via input 138c to a multiplexer in order to appropriately modify the pacer performance as a function of power source variations. For example, it is desired to increase the pacing pulse width as supply voltage decreases to create a more constant energy pulse, or to slow the pacing rate as supply voltage decreases to indicate a need for pacer replacement or modification via external programming.

The Duggan reference does not disclose or suggest determining whether one or more operating parameters, other than pacing pulse width and pacing pulse amplitude, require adjustment in response to a change in the pacing pulse energy. Nor does the Duggan reference disclose or suggest adjusting a value for an operating parameter to a new value if the operating parameter requires adjustment, wherein the new value is based upon the pacing pulse energy. The Duggan reference is directed to maintaining a constant pulse energy by increasing the pacing pulse width as the output voltage V_s decreases. It is noted that pacing pulse energy is a function of both pacing pulse width and pacing pulse amplitude. As such, a change in pacing pulse width does not necessarily result in a change in pacing pulse energy if the pacing pulse amplitude (voltage) decreases appropriately.

Furthermore, claim 1 recites that the one or more operating parameters are other than pacing pulse width and pacing pulse amplitude, whereas the Duggan reference is directed to modifying the pacing pulse width due to a decrease in pacing pulse amplitude (voltage). In addition, the Duggan reference discloses slowing the pacing rate as supply voltage decreases to indicate a need for pacer replacement or modification via external programming. However, this adjustment in pacing rate is not in response to a change in pacing pulse energy. As stated previously, the Duggan reference is directed to maintaining a constant pulse energy.

The *Mann et al.* reference discloses an implantable stimulation device that limits the utilization of high power consumption modes during low battery periods. When the battery is below a predetermined threshold, the implantable stimulation device is switched from a high current drain mode of operation to progressively lower current drain modes of operation. The *Mann et al.* reference does not disclose or suggest determining whether one or more operating parameters require adjustment in response to a change in the pacing pulse energy and adjusting a value for an operating parameter to a new value if the operating parameter requires adjustment, wherein the new value is based upon the pacing pulse energy. The *Mann et al.* reference is directed to reducing drain current at a recommended replace time.

Accordingly, it is respectfully submitted that claim 1 is in condition for allowance.

Dependent Claims 2-7, 22, and 23

Claims 2-7, 22, and 23 depend from claim 1 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 8

For at least the same reasons discussed above with regards to claim 1, it is respectfully submitted that claim 8 is in condition for allowance.

Dependent Claims 9, 10, and 24

Claims 9, 10, and 24 depend from claim 8 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 11

For at least the same reasons discussed above with regards to claim 1, it is respectfully submitted that claim 11 is in condition for allowance.

Dependent Claims 12-20

Claims 12-20 depend from claim 11 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 21

For at least the same reasons discussed above with regards to claim 1, it is respectfully submitted that claim 21 is in condition for allowance.

Dependent Claims 25 and 26

Claims 25 and 26 depend from claim 21 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

CONCLUSION


In light of the above claim amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

4/21/04

Date

Pacesetter, Inc.
15900 Valley View Court
Sylmar, CA 91392-9221
818/493-3157
818/362-4795 (fax)



Ronald S. Tamura, Reg. No. 43,179
Patent Attorney for Applicant